

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Ralf BERTRAM et al. Confirmation No.: 3541  
Appln. No. : 10/007,583 Group Art Unit: 3685  
Filed : December 5, 2001 Examiner: C.O. Sherr  
For : SYSTEM AND METHOD FOR ITEM RECOMMENDATION

**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

Commissioner for Patents  
U.S. Patent and Trademark Office  
Customer Window, Mail Stop Appeal Brief-Patents  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Sir:

This appeal is from the Examiner's final rejection of claims 1-32 as set forth in the Final Office Action of July 28, 2008. A Notice of Appeal, in response to the July 28, 2008 Final Office Action, was filed on November 28, 2008 along with an extension of time. The instant Appeal Brief is being timely filed within two months of the Notice of Appeal.

Payment in the amount of \$ 540.00 is being concurrently submitted as payment of the requisite fee under 37 C.F.R. 41.20(b)(2). No additional fee is believed to be required for filing the instant Appeal Brief. However, if for any reason a necessary fee is required for consideration of the instant paper, authorization is hereby given to charge the fee for the Appeal Brief and any necessary extension of time fees to Deposit Account No. 09-0457.

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**(I) REAL PARTY IN INTEREST**

The real party in interest is International Business Machines Corporation by an assignment recorded in the U.S. Patent and Trademark Office on December 5, 2001, at Reel 012370 and Frame 0956.

**(II) RELATED APPEALS AND INTERFERENCES**

No related appeals and/or interferences are pending.

**(III) STATUS OF THE CLAIMS**

Claims 1-32 are the only pending claims. Claims 1-32 stand finally rejected. Claims 1-32 are the subject of this appeal. The claims in issue are attached in the "Claims Appendix".

**(IV) STATUS OF THE AMENDMENTS**

A Response under 37 C.F.R. § 1.116 was filed September 29, 2008, requesting reconsideration of the finally rejected claims. The Examiner responded with an Advisory Action mailed November 17, 2008, indicating that the Response was considered, but did not place the application in condition for allowance. Appellants submit that no other amendments after final have been filed; however, all amendments to the claims have been entered.

**(V) SUMMARY OF THE CLAIMED SUBJECT MATTER****A. The Claimed Subject Matter****1. INDEPENDENT CLAIM 1**

With reference to pages 6-28 of the instant application and to the figures, and by way of non-limiting example, the invention provides for a computerized method (see page 6, lines 9-26 of the instant specification) for generating a recommendation of an item to an advisee,

comprising the steps of receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system (see page 18, lines 6-9 and page 21, lines 18-19 of the instant specification) and in response to the recommendation request, computing a plurality of similarity factors (see page 10, lines 22-28 and page 11, lines 15-28 of the instant specification) based on: at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item, wherein the advisee profile comprises a plurality of records, each record including a user identifier, an item identifier, and a rating value, such that each record is linked in a first and a second dimension (see page 22, lines 3-29 and page 23, lines 2-12 of the instant specification) and items from the selected item list that indicate similarity between the advisee and a plurality of users of the recommendation system who have previously provided ratings of items from the selected item list (see page 20, line 25 to page 21, line 1 of the instant specification). The method also includes selecting, from the plurality of users of the recommendation system, neighboring users to the advisee, according to the similarity factors (see page 14, line 24 to page 15, line 24 of the instant specification) and generating a recommendation of at least one item of the selected item list, according to the previously provided ratings of the at least one item by the neighboring users (see page 16, lines 21-27 and page 21, lines 19-22 of the instant specification). The similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request (see page 15, line 32 to page 16, line 6, page 21, lines 2-4 and page 27, lines 8-10 of the instant specification).

**2. INDEPENDENT CLAIM 7**

With reference to pages 6-28 of the instant application and to the figures, and by way of non-limiting example, the invention provides for a user profile for a recommendation system (see page 7, line 2 to page 8, line 33 of the instant specification), comprising a plurality of records, each record including a user identifier, an item identifier, and a rating value (see page 22, lines 3-17 of the instant specification). Each record is linked in a first and a second dimension and the first dimension links records with a same user identifier in a sequence according to the item identifier (see page 22, lines 3-29 and page 23, lines 2-12 of the instant specification). The second dimension links records with a same item identifier in a sequence according to the user identifier (see page 23, lines 2-28 of the instant specification). The system updates only similarity factors between neighboring users and an advisee when a new rating is entered for at least advisee profile and utilizes an algorithm to determined a ranked matching list of the neighboring users (see page 15, lines 15-19, page 15, line 32 to page 16, line 6, page 21, lines 2-4, page 25, lines 6-9, and page 27, lines 8-10 of the instant specification).

**3. INDEPENDENT CLAIM 8**

With reference to pages 6-28 of the instant application and to the figures, and by way of non-limiting example, the invention provides for a computerized method (see page 6, lines 9-26 of the instant specification) for generating a recommendation of an item to an advisee (see page 16, lines 21-27 and page 21, line 19-22 of the instant specification), comprising the steps of receiving a recommendation request comprising a selected item list from an advisee for the recommendation by a recommendation system (see page 18, lines 6-9 and page 21, line 18-19 of

the instant specification) and in response to the recommendation request, computing a plurality of similarity factors based on at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item (see page 22, lines 3-29 and page 23, line 2-12 of the instant specification). The method also includes selecting a first set of users from a group of users of the recommendation system based on the selected item list (see page 25, lines 5-12 of the instant specification), selecting neighboring users from the first set of users based on similarities between the advisee and each member of the first set of users (see page 25, line 13 to page 26, line 26 of the instant specification), and generating a recommendation of at least one item from the selected item list based on ratings provided by each neighboring user (see page 16, lines 21-27 and page 21, line 19-22 of the instant specification). The method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list (see page 21, lines 2-4 and 18-22 , page 25, lines 6-9, and page 27, lines 8-10 of the instant specification).

#### **4. INDEPENDENT CLAIM 32**

With reference to pages 6-28 of the instant application and to the figures, and by way of non-limiting example, the invention provides for a computerized method for recommending an item to an advisee utilizing a user profile comprising, for each of a multitude of items, at least a rating value and excluding any pre-computed similarity factor measuring similarity between users (see page 4, lines 2-8 of the instant specification). The method constructs a recommendation to the advisee and comprises temporarily calculating, for use within a recommendation request only, a multitude of similarity factors measuring the similarity between

the advisee and the multitude of other users (see page 4, lines 9-12 of the instant specification). The method also comprises associating the similarity factors with the other users (see page 4, lines 12-13 of the instant specification). The method further comprises determining a subset, from the multitude of users, of neighboring users nearest the advisee as determined by the similarity factors (see page 4, lines 14-16 of the instant specification). Finally, the method comprises recommending at least one item based on the similarity factors of the neighboring users and based on rating values of the items by the neighboring users (see page 4, lines 17-19 of the instant specification).

#### **(VI) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

**Whether claims 1-32 (incorrectly listed as claims 1-19) are improperly rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,029,195 issued to HERZ alone.**

#### **(VII) ARGUMENT RE. 103(a) REJECTION**

**The rejection of claims 1-32 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,029,195 issued to HERZ alone is improper and should be withdrawn.**

##### **REJECTION OF INDEPENDENT CLAIM 1 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Independent claim 1 recites, in pertinent part:

computing a plurality of similarity factors based on:

at least one advisee profile from at least one newly rated item and  
determining which at least one user has already rated the item, wherein the  
advisee profile for a recommendation system comprises a plurality of records,

each record including a user identifier, an item identifier, and a rating value, such that each record is linked in a first and a second dimension; and generating a recommendation of at least one item of the selected item list, according to the previously provided ratings of the at least one item by the neighboring users.  
the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request.

On page 5 of the Final Office Action, the Examiner points to col. 25, lines 46-62 and col. 3, lines 1-10 of HERZ as disclosing "receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system". Appellants disagree. The noted language of HERZ merely states the following:

Note that for bottom-up clustering to work, it must be possible to apply the clustering algorithm to a set of existing clusters. This requires a notion of the distance between two clusters. The method disclosed above for measuring the distance between target objects can be applied directly, provided that clusters are profiled in the same way as target objects. It is only necessary to adopt the convention that a cluster's profile is the average of the target profiles of all the target objects in the cluster; that is, to determine the cluster's value for a given attribute, take the mean value of that attribute across all the target objects in the cluster. For the mean value to be well-defined, all attributes must be numeric, so it is necessary as usual to replace each textual or associative attribute with its decomposition into numeric attributes (scores), as described earlier. For example, the target profile of a single Woody Allen film would assign "Woody-Allen" a score of 1 in the "name-of-director" field

The information retrieval computer generates an article profile for the request and then retrieves articles with profiles similar to the profile generated for the request. These requests can then be refined using "relevance feedback", where the user actively or passively rates the articles retrieved as to how close the information contained therein is to what is desired. The information retrieval computer then uses this relevance feedback information to refine the request profile and the process is repeated until the user either finds enough articles or tires of the search.

There is no language in the noted passages even remotely disclosing receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system. Retrieving articles with profiles similar to the profile generated for

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a request is simply not the same as receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature.

On pages 5 and 6 of the Final Office Action, the Examiner also points to col. 3, lines 7-10 of HERZ as disclosing “in response to the recommendation request, computing a plurality of similarity factors based on: at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item, wherein the advisee profile comprises a plurality of records, each record including a user identifier, an item identifier, and a rating value, such that each record is linked in a first and a second dimension”. Appellants disagree. The noted language of HERZ merely states the following:

The information retrieval computer then uses this relevance feedback information to refine the request profile and the process is repeated until the user either finds enough articles or tires of the search.

There is no language whatsoever in the noted passage disclosing in response to the recommendation request, computing a plurality of similarity factors based on: at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item, wherein the advisee profile comprises a plurality of records, each record including a user identifier, an item identifier, and a rating value, such that each record is linked in a first and a second dimension. Indeed, the above-noted language of HERZ says nothing about rating items, much less, determining which at least one user has already rated the item. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited

feature. Instead, the noted language merely discloses using relevance feedback information.

On page 6 of the Final Office Action, the Examiner points to col. 3, lines 1-3 and col. 6, lines 38-45 of HERZ as disclosing items from the selected item list that indicate similarity between the advisee and a plurality of users of the recommendation system who have previously provided ratings of items from the selected item list. Appellants disagree. The noted language of HERZ merely states the following:

The information retrieval computer generates an article profile for the request and then retrieves articles with profiles similar to the profile generated for the request.

In all these cases, the information delivery process in the preferred embodiment is based on determining the similarity between a profile for the target object and the profiles of target objects for which the user (or a similar user) has provided positive feedback in the past. The individual data that describe a target object and constitute the target object's profile are herein termed "attributes" of the target object.

There is no language whatsoever in the noted passages disclosing items from the selected item list that indicate similarity between the advisee and a plurality of users of the recommendation system who have previously provided ratings of items from the selected item list. Obtaining positive feedback from a user is simply not the same as obtaining from the advisee and a plurality of users ratings of items from the selected item list. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature.

On page 6 of the Final Office Action, the Examiner additionally points to col. 12, lines 25-27 and col. 20, lines 1-22 of HERZ as disclosing "selecting, from the plurality of users of the recommendation system, neighboring users to the advisee, according to the similarity factors". Appellants disagree. The noted language of HERZ merely states the following:

As always, the notion is that similar consumers buy similar products. It should be noted that diverse sorts of information are being used here to characterize consumers.

The method of determining a user's interest relies on the following heuristic: when X and Y are similar target objects (have similar attributes), and U and V are similar users (have similar attributes), then topical interest  $f(U, X)$  is predicted to have a similar value to the value of topical interest  $f(V, Y)$ . This heuristic leads to an effective method because estimated values of the topical interest function  $f(*, *)$  are actually known for certain arguments to that function: specifically, if user V has provided a relevance-feedback rating of  $r(V, Y)$  for target object Y, then insofar as that rating represents user V's true interest in target object Y, we have  $r(V, Y) = q(V, Y) + f(V, Y)$  and can estimate  $f(V, Y)$  as  $r(V, Y) - q(V, Y)$ . Thus, the problem of estimating topical interest at all points becomes a problem of interpolating among these estimates of topical interest at selected points, such as the feedback estimate of  $f(V, Y)$  as  $r(V, Y) - q(V, Y)$ . This interpolation can be accomplished with any standard smoothing technique, using as input the known point estimates of the value of the topical interest function  $f(*, *)$ , and determining as output a function that approximates the entire topical interest function  $f(*, *)$ .

Appellants fail to recognize any language in the noted passage disclosing selecting, from the plurality of users of the recommendation system, neighboring users to the advisee, according to the similarity factors. Determining a user's interest using a heuristic is simply not the same as selecting, from the plurality of users of the recommendation system, neighboring users to the advisee, according to the similarity factors. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature.

On page 6 of the Final Office Action, the Examiner also points to col. 70, lines 1-7 of HERZ (as well as the above-noted language of col. 12, lines 25-27 and col. 20, lines 1-22) as disclosing "generating a recommendation of at least one item of the selected item list, according to the previously provided ratings of the at least one item by the neighboring users". Appellants disagree. The noted language (i.e., col. 70, lines 1-7) of HERZ merely states the following:

1. Automatically create a "customized newspaper".  
User profiling enabling custom recommendations may be achieved by purely passive means of user activity data or if desired, it can refine and automate the selection process

of articles within user selected categories of interest as well as recommend articles within different categories which the user is likely to prefer as evidenced through past behaviors.

Appellants fail to recognize any language in the noted passages disclosing generating a recommendation of at least one item of the selected item list, according to the previously provided ratings of the at least one item by the neighboring users. Indeed, the Examiner has not even identified the recited selected item list. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature.

The Examiner also asserts, on page 7 of the instant Final Office Action, that col. 6, lines 34-39 of HERZ renders obvious the feature that the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request (claim 1).

Appellants disagree. Col. 6, lines 34-39 of HERZ merely states the following:

Accordingly, like other target objects, users (or user pseudonyms) in accordance with their user profiles (or portions of which they have disclosed) may be organized and browsed within an automatically generated menu tree, which is below described in detail.

It is apparent from a fair reading of the noted language that it is entirely unrelated and silent with regard to calculating similarity factors, much less, that the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request.

Appellants also refer the Examiner to the decision in *Ex parte BAUDENDISTEL* which, although a non-precedential decision, explains that claim terms must be interpreted “consistent with applicants’ specification” (see page 6 of the opinion). Thus, it would not be proper to construe the system of HERZ, which considers in the computation “relevant feedback from all users” and “considers all subclusters” to disclose or suggest that the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request

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(claim 1).

Furthermore, to the extent that the Examiner believes that he may construe the language of claim 1 “broadly” to encompass the disclosed system of HERZ, Appellants remind the Examiner that the “broadest reasonable interpretation” standard must be one that “would be understood by one of ordinary skill in the art, taking into consideration the description of the applicant’s specification. *In re Morris*, 127 F.3D 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)”. See page 3 of the non-precedential decision *Ex parte HADDAD*. The specification describes, on paragraph [0056] of the instant published application No. 2002/0178057, the following:

... instead of updating the similarity factors between a rating user and every other user of the system (which has computational order of  $n \cdot \sup{2}$ ), only the similarity factors between the rating user and the rating user’s neighbors, as well as the similarity factors between the rating user and the neighbors of the rating user’s neighbors are updated. This limits the number of user profiles which must be compared to  $m \cdot \sup{2}$  minus any degree of user overlap between the neighbor sets where  $m$  is a number smaller than  $n$  (emphasis added).

As such, it is submitted that claim 1 must be interpreted to require (which HERZ clearly fails to disclose or suggest) that the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request.

Additionally, to the extent that the Examiner believes that the system disclosed in HERZ is capable of functioning such that the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request, Appellants submit that the Examiner has failed to identify the disclosed “structure which is capable of performing the recited functional limitations” (see pages 4 and 5 of non-precedential decision *Ex parte*

*ZDEPSKI*). Certainly, the language identified by the Examiner in HERZ has not been shown by the Examiner, or by the actual disclosure of HERZ, to be capable of functioning such that the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request.

Appellants submit that the Examiner has provided only conclusions of obviousness and neglects to set forth any prior art basis for modifying the teachings of HERZ. In establishing a *prima facie* case of obviousness under 35 U.S.C. § 103, it is incumbent upon the Examiner to provide a reason *why* one of ordinary skill in the art would have found it obvious to modify a prior art reference or to combine reference teachings to arrive at the claimed invention. *See Ex parte Clapp*, 227 USPQ 972 (B.P.A.I. 1985). As noted above, the applied document is silent with regard to a number of recited features and relates to an information system which functions in a different manner. Moreover, HERZ does not teach or suggest modifying the structure or operation of HERZ in the manner asserted by the Examiner.

Because the art of record fails to provide any reasonable explanation why one ordinarily skilled in the art would utilize such an arrangement, and/or fails to disclose or suggest the problems that such an arrangement would address, Appellants submit that the art of record fails to provide the requisite rationale as to *why* one ordinarily skilled in the art would modify HERZ to include features of the invention in the manner asserted by the Examiner. That is, Appellants submit that because the Examiner has not set forth any basis or reason found in the art of record for modifying HERZ, the instant rejection has no basis in the art of record, such that the rejection is improper and should be withdrawn.

Rejections based on 35 U.S.C. § 103 must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. The Examiner has the initial duty of supplying the factual basis for the rejection and may not, because of doubt that the invention is patentable, resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis. *See In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 177 (CCPA 1967). As stated in *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984):

[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.

Appellants submit that the only reason to modify the teachings of the applied reference in the manner proposed by the Examiner is the result of a review of Appellants' disclosure and the application of impermissible hindsight.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least independent claim 1.

**REJECTION OF INDEPENDENT CLAIM 7 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

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Independent claim 7 recites, in pertinent part:

each record including a user identifier, an item identifier, and a rating value, wherein each record is linked in a first and a second dimension, the first dimension linking records with a same user identifier in a sequence according to the item identifier, and the second dimension linking records with a same item identifier in a sequence according to the user identifier, wherein the system updates only similarity factors between neighboring users and an advisee when a new rating is entered for at least one advisee profile and utilizes an algorithm to determine a ranked matching list of the neighboring users.

On page 8 of the Final Office Action, the Examiner points to col. 39, lines 1-22 of HERZ as disclosing “a user profile for a recommendation system, comprising a plurality of records, each record including a user identifier, an item identifier, and a rating value, wherein each record is linked in a first and a second dimension, the first dimension linking records with a same user identifier in a sequence according to the item identifier, and the second dimension linking records with a same item identifier in a sequence according to the user identifier”. Appellants disagree.

The noted language of HERZ merely states the following:

Specifically, letting S denote the server that is directly associated with user U's client processor, the proxy server communicates with server S (and thence with user U), either through anonymizing mix paths that obscure the identity of server S and user U, in which case the proxy server knows user U only through a secure pseudonym, or else through a conventional virtual point-to-point connection, in which case the proxy server knows user U by user U's address at server S, which address may be regarded as a non-secure pseudonym for user U.

2. A second function of the proxy server is to record user-specific information associated with user U. This user-specific information includes a user profile and target profile interest summary for user U, as well as a list of access control instructions specified by user U, as described below, and a set of one-time return addresses provided by user U that can be used to send messages to user U without knowing user U's true identity. All of this user-specific information is stored in a database that is keyed by user U's pseudonym (whether secure or non-secure) on the proxy server.



There is no language in the noted passages disclosing a user profile for a recommendation system, comprising a plurality of records, each record including a user identifier, an item identifier, and a rating value, wherein each record is linked in a first and a second dimension, the first dimension linking records with a same user identifier in a sequence according to the item identifier, and the second dimension linking records with a same item identifier in a sequence according to the user identifier.

Nor has the Examiner shown how the noted language can be read or interpreted to disclose or suggest the recited feature. Indeed, the Examiner has not even specified which features in HERZ that can be characterized as a user identifier, an item identifier, a rating value, or a first and a second dimension. Instead, the noted language merely discusses how a proxy server can communicate with a server through mixed paths. Although the noted passage discusses how the proxy server can also record user specific information, this is not the same wherein each record being linked in a first and a second dimension, much less, that the first dimension links records with a same user identifier in a sequence according to the item identifier, and that the second dimension links records with a same item identifier in a sequence according to the user identifier.

With regard to the feature “the system updates only similarity factors between neighboring users and an advisee when a new rating is entered for at least one advisee profile and utilizes an algorithm to determine a ranked matching list of the neighboring users”, Appellants acknowledge that the system can use an algorithm and clustering to make the search more efficient (see col. 25, lines 45-62 and col. 26, lines 1-5). However, step 1205 of Fig. 12 and col.

26, lines 11-17 of HERZ makes clear that the system considers in the computation “relevant feedback from all users” and “considers all subclusters”. As such, it is submitted that HERZ fails to disclose or suggest that the system updates only the similarity factors between neighboring users and an advisee when a new rating is entered for at least one advisee profile and utilizes an algorithm to determine a ranked matching list of the neighboring users).

The Examiner’s assertion on page 9 of the instant Office Action, that col. 6, lines 34-39 of HERZ renders obvious the feature that the system updates only the similarity factors between neighboring users and an advisee when a new rating is entered for at least one advisee profile and utilizes an algorithm to determine a ranked matching list of the neighboring users is also unpersuasive. Col. 6, lines 34-39 of HERZ merely states the following:

Accordingly, like other target objects, users (or user pseudonyms) in accordance with their user profiles (or portions of which they have disclosed) may be organized and browsed within an automatically generated menu tree, which is below described in detail.

It is apparent from a fair reading of the noted language that it is entirely unrelated and silent with regard to calculating similarity factors, much less, that the system updates only the similarity factors between neighboring users and an advisee when a new rating is entered for at least one advisee profile and utilizes an algorithm to determine a ranked matching list of the neighboring users.

Again, to the extent that the Examiner believes that he may construe the language of claim 7 “broadly” to encompass the disclosed system of HERZ, Appellants remind the Examiner that the “broadest reasonable interpretation” standard must be one that “would be understood by one of ordinary skill in the art, taking into consideration the description of the applicant’s

specification. *In re Morris*, 127 F.3D 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)”. See page 3 of the non-precedential decision *Ex parte HADDAD*. This has clearly not been done in this case.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least independent claim 7.

**REJECTION OF INDEPENDENT CLAIM 8 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 8 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Independent claim 8 recites, in pertinent part:

... receiving a recommendation request comprising a selected item list from the advisee for the recommendation by a recommendation system;  
in response to the recommendation request, computing a plurality of similarity factors based on at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item, and  
generating a recommendation of at least one item from the selected item list based on ratings provided by each neighboring user, wherein the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list.

On page 10 of the Final Office Action, the Examiner points to col. 25, lines 46-62 and col. 3, lines 1-10 of HERZ as disclosing “receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system”.

Appellants disagree. The noted language of HERZ merely states the following:

Note that for bottom-up clustering to work, it must be possible to apply the clustering algorithm to a set of existing clusters. This requires a notion of the distance between two clusters. The method disclosed above for measuring the distance between target objects can be applied directly, provided that clusters are profiled in the same way as target objects. It is only necessary to adopt the convention that a cluster's profile is the average of the target profiles of all the target objects in the cluster; that is, to determine the cluster's value for a given attribute, take the mean value of that attribute across all the target objects in the cluster. For the mean value to be well-defined, all attributes must be numeric, so it is necessary as usual to replace each textual or associative attribute with its decomposition into numeric attributes (scores), as described earlier. For example, the target profile of a single Woody Allen film would assign "Woody-Allen" a score of 1 in the "name-of-director" field.

The information retrieval computer generates an article profile for the request and then retrieves articles with profiles similar to the profile generated for the request. These requests can then be refined using "relevance feedback", where the user actively or passively rates the articles retrieved as to how close the information contained therein is to what is desired. The information retrieval computer then uses this relevance feedback information to refine the request profile and the process is repeated until the user either finds enough articles or tires of the search.

There is no language in the noted passages even remotely disclosing receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system. Retrieving articles with profiles similar to the profile generated for a request is simply not the same as receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature.

The Examiner also points to col. 3, lines 7-10 of HERZ as disclosing "in response to the recommendation request, computing a plurality of similarity factors based on at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item". Appellants disagree. The noted language of HERZ merely states the following:

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The information retrieval computer then uses this relevance feedback information to refine the request profile and the process is repeated until the user either finds enough articles or tires of the search.

There is no language whatsoever in the noted passage disclosing in response to the recommendation request, computing a plurality of similarity factors based on at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item. Indeed, the above-noted language of HERZ says nothing about rating items, much less, determining which at least one user has already rated the item. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature. Instead, the noted language merely discloses using relevance feedback information.

The Examiner additionally points to col. 12, lines 25-27, col. 20, lines 1-22, and col. 70, lines 1-7 of HERZ as disclosing “generating a recommendation of at least one item from the selected item list based on ratings provided by each neighboring user”. Appellants disagree. The noted language of HERZ merely states the following:

As always, the notion is that similar consumers buy similar products. It should be noted that diverse sorts of information are being used here to characterize consumers. The method of determining a user's interest relies on the following heuristic: when X and Y are similar target objects (have similar attributes), and U and V are similar users (have similar attributes), then topical interest  $f(U, X)$  is predicted to have a similar value to the value of topical interest  $f(V, Y)$ . This heuristic leads to an effective method because estimated values of the topical interest function  $f(*, *)$  are actually known for certain arguments to that function: specifically, if user V has provided a relevance-feedback rating of  $r(V, Y)$  for target object Y, then insofar as that rating represents user V's true interest in target object Y, we have  $r(V, Y) = q(V, Y) + f(V, Y)$  and can estimate  $f(V, Y)$  as  $r(V, Y) - q(V, Y)$ . Thus, the problem of estimating topical interest at all points becomes a problem of interpolating among these estimates of topical interest at selected points, such as the feedback estimate of  $f(V, Y)$  as  $r(V, Y) - q(V, Y)$ . This interpolation can be accomplished with any standard smoothing technique, using as input the known point estimates of the value of the topical interest function  $f(*, *)$ , and determining as output a function that approximates the entire topical interest function  $f(*, *)$ .

2. Automatically create a "customized newspaper".

User profiling enabling custom recommendations may be achieved by purely passive means of user activity data or if desired, it can refine and automate the selection process of articles within user selected categories of interest as well as recommend articles within different categories which the user is likely to prefer as evidenced through past behaviors.

Appellants fail to recognize any language in the noted passages disclosing generating a recommendation of at least one item from the selected item list based on ratings provided by each neighboring user. Indeed, the Examiner has not even identified the recited selected item list. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature.

With regard to the feature “the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list”, Appellants acknowledge that that the system uses clustering to make the search more efficient (see col. 25, lines 45-62 and col. 26, lines 1-5). However, step 1205 of Fig. 12 and col. 26, lines 11-17 of HERZ makes clear that the system considers in the computation “relevant feedback from all users” and “considers all subclusters”. As such, it is submitted that HERZ fails to disclose or suggest that the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list (claim 8).

The Examiner’s assertion on page 12 of the instant Office Action, that col. 6, lines 34-39 of HERZ renders obvious the feature that the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list is also unpersuasive. Col. 6, lines 34-39 of HERZ merely states the following:

Accordingly, like other target objects, users (or user pseudonyms) in accordance with  
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their user profiles (or portions of which they have disclosed) may be organized and browsed within an automatically generated menu tree, which is below described in detail.

It is apparent from a fair reading of the noted language that it is entirely unrelated and silent with regard to calculating similarity factors, much less, that the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list.

On page 12 of the instant Office Action, the Examiner also appears to assert that col. 8, lines 38-48 of HERZ renders obvious the feature that the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list is unpersuasive. The noted language merely discusses how target profile interest summaries can be used to predict consumption patterns of a user to allow for pre-caching.

Again, to the extent that the Examiner believes that he may construe the language of claim 8 “broadly” to encompass the disclosed system of HERZ, Appellants remind the Examiner that the “broadest reasonable interpretation” standard must be one that “would be understood by one of ordinary skill in the art, taking into consideration the description of the applicant’s specification. *In re Morris*, 127 F.3D 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)”. See page 3 of the non-precedential decision *Ex parte HADDAD*. This has clearly not been done in this case.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least independent claim 8.

**REJECTION OF INDEPENDENT CLAIM 32 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 32 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Independent claim 32 recites, in pertinent part:

temporarily calculating, for use within a recommendation request only, a multitude of similarity factors measuring the similarity between the advisee and the multitude of other users;  
associating the similarity factors with the other users;  
determining a subset, from the multitude of users, of neighboring users nearest the advisee as determined by the similarity factors; and  
recommending at least one item based on the similarity factors of the neighboring users and based on rating values of the items by the neighboring users.

Appellant initially notes that the specific features of claim 32 were not addressed in the Final Rejection. Instead, the Examiner lumps claim 32 with claim 1 as if they recite the same features and fails to mention and treat the specific differences between claims 1 and 32.

However, claim 32 does not recite the same features of claim 1. For example, claim 32 recites temporarily calculating, for use within a recommendation request only, a multitude of similarity factors measuring the similarity between the advisee and the multitude of other users as well as determining a subset, from the multitude of users, of neighboring users nearest the advisee as determined by the similarity factors. These features have not even been mentioned in the Final Rejection, much less, shown to be disclosed or suggested by HERZ.

As explained above in the rejection of claim 1, the Examiner's opinion that col. 6, lines 34-39 of HERZ renders obvious the feature recommending at least one item based on the similarity factors of the neighboring users and based on rating values of the items by the



neighboring users (claim 32) is unpersuasive. Col. 6, lines 34-39 of HERZ merely states the following:

Accordingly, like other target objects, users (or user pseudonyms) in accordance with their user profiles (or portions of which they have disclosed) may be organized and browsed within an automatically generated menu tree, which is below described in detail.

It is apparent from a fair reading of the noted language that it is entirely unrelated and silent with regard to similarity factors, much less, recommending at least one item based on the similarity factors of the neighboring users and based on rating values of the items by the neighboring users.

Moreover, Appellant submits that, at best, the Examiner has merely identified broad passages of HERZ without providing “any citation specifically addressing” each claim limitation and that this is entirely improper. This is improper. See page 8 of non-precedential decision *Ex parte HUA*.

As such, it is submitted that HERZ fails to disclose or suggest temporarily calculating, for use within a recommendation request only, a multitude of similarity factors measuring the similarity between the advisee and the multitude of other users as well as determining a subset, from the multitude of users, of neighboring users nearest the advisee as determined by the similarity factors.

Appellants also incorporate by reference herein the arguments of claim 1 which are relevant to claim 32. For example, HERZ does not disclose or suggest recommending at least one item based on the similarity factors of the neighboring users at col. 70, lines 1-7 of HERZ (as well as at the above-noted language of col. 12, lines 25-27 and col. 20, lines 1-22).

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least independent claim 32.

**REJECTION OF DEPENDENT CLAIM 2 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 2 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 2 depends from claim 1 and further recites, in pertinent part:

wherein all items upon which the step of computing depends are included in the selected item list.

The Examiner explains that col. 16, lines 34-48 teaches this feature. Appellants disagree.

The noted language merely states the following:

A related technique is to replace each word by its morphological stem, so that "staple", "stapler", and "staples" are all replaced by "staple." Common function words ("a", "and", "the" . . . ) can influence the calculated similarity of texts without regard to their topics, and so are typically removed from the text before the scores of terms in the text are computed. A more general approach to recognizing synonyms is to use a revised measure of the distance between textual attribute vectors  $V$  and  $U$ , namely  $\arccos(AV(AU)^t / \sqrt{(AV(AV)^t AU(AU)^t)})$ , where the matrix  $A$  is the dimensionality-reducing linear transformation (or an approximation thereto) determined by collecting the vector values of the textual attribute, for all target objects known to the system, and applying singular value decomposition to the resulting collection.

While it is apparent that the above-noted language discusses how vector values can be determined for all target objects known to the system, this is not the same as wherein all items upon which the step of computing depends are included in the selected item list. Neither vector

values nor target objects constitute items from a selected item list which indicate similarity as defined in claim 1, and the Examiner has not demonstrated otherwise.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 2.

**REJECTION OF DEPENDENT CLAIM 3 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 3 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 3 depends from claims 1 and 2, and further recites, in pertinent part:

wherein the recommendation of at least one item includes only items that are included in the selected item list.

The Examiner explains that col. 26, lines 22-45 teaches this feature. Appellants disagree.

The noted language merely states the following:

1. Initialize list of identified target objects to the empty list at step 13A00
2. Initialize the current tree T to be the hierarchical cluster tree of all objects at step 13A01 and at step 13A02 scan the current cluster tree for target objects similar to P, using the process detailed in FIG. 13B. At step 13A03, the list of target objects is returned.
3. At step 13B00, the variable I is set to 1 and for each child subtree  $T_i$  of the root of tree T, is retrieved.
4. At step 13B02, calculate  $d(P, p_i)$ , the similarity distance between P and  $p_i$ ,
5. At step 13B03, if  $d(P, p_i) < t$ , a threshold, branch to one of two options
6. If tree  $T_i$  contains only one target object at step 13B04, add that target object to list of identified target objects at step 13B05 and advance to step 13B07.

7. If tree  $T_i$  contains multiple target objects at step 13B04, scan the  $i$ th child subtree for target objects similar to  $P$  by invoking the steps of the process of FIG. 13B recursively and then recurse to step 3 (step 13A01 in FIG. 13A) with  $T$  bound for the duration of the recursion to tree  $T_i$ , in order to search in tree  $T_i$  for target objects with profiles similar to  $P$ .

While it is apparent that the above-noted language discusses how target objects with similar profiles are searched, this is not the same as wherein the recommendation of at least one item includes only items that are included in the selected item list. Target objects do not constitute only items from a selected item list, and the Examiner has not demonstrated otherwise.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 3.

**REJECTION OF DEPENDENT CLAIM 4 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 4 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 4 depends from claim 1, and further recites, in pertinent part:

wherein the step of selecting neighboring users excludes, any user whose similarity with the advisee is below a predetermined threshold.

The Examiner explains that col. 88, lines 8-37 teaches this feature. Appellants disagree.

The noted language merely states the following:

Once Virtual Community Service identifies a cluster  $C$  of messages, users, search profiles, or target objects that determines a pre-community  $M$ , it attempts to arrange for the members of this pre-community to have the chance to participate in a common virtual community  $V$ . In many cases, an existing virtual community  $V$  may suit the needs of the pre-community  $M$ . Virtual Community Service first attempts to find such an existing

community V. In the case where cluster C is a cluster of messages, V may be chosen to be any existing virtual community such that the cluster profile of cluster C is within a threshold distance of the mean profile of the set of messages recently posted to virtual community V; in the case where cluster C is a cluster of users, V may be chosen to be any existing virtual community such that the cluster profile of cluster C is within a threshold distance of the mean user profile of the active members of virtual community V; in the case where the cluster C is a cluster of search profiles, V may be chosen to be any existing virtual community such that the cluster profile of cluster C is within a threshold distance of the cluster profile of the largest cluster resulting from clustering all the search profiles of active members of virtual community V; and in the case where the cluster C is a cluster of one or more target objects chosen from a separate browsing or filtering system, V may be chosen to be any existing virtual community initiated in the same way from a cluster whose cluster profile in that other system is within a threshold distance of the cluster profile of cluster C. The threshold distance used in each case is optionally dependent on the cluster variance or cluster diameter of the profile sets whose means are being compared.

While it is apparent that the above-noted language discusses how threshold distances of the mean user profile of the active members of a virtual community can be utilized, this is not the same as wherein the step of selecting neighboring users excludes, any user whose similarity with the advisee is below a predetermined threshold. Establishing a virtual community using distances is simply not the same as excluding any user whose similarity with the advisee is below a predetermined threshold as defined in claim 4, and the Examiner has not demonstrated otherwise.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 4.

**REJECTION OF DEPENDENT CLAIM 5 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 5 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the

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application should be remanded to the Examiner.

Dependent claim 5 depends from claim 1, and further recites, in pertinent part:

wherein the step of computing and the step of selecting are executed substantially in parallel by inserting each newly computed similarity factor into a neighbor list in decreasing order of similarity and by limiting length of the neighbor list by excluding a user with lowest similarity if otherwise the neighbor list would exceed a predetermined length.

The Examiner explains that col. 18, lines 5-8 teach this feature. Appellants disagree. The noted language merely states the following:

To prevent users from being flooded with responses, it may be desirable to limit the number of notifications each user receives to a fixed number, such as ten per day.

While it is apparent that the above-noted language discusses how the system can limit the number of notifications per day that can be received, this is not the same as wherein the step of computing and the step of selecting are executed substantially in parallel by inserting each newly computed similarity factor into a neighbor list in decreasing order of similarity and by limiting length of the neighbor list by excluding a user with lowest similarity if otherwise the neighbor list would exceed a predetermined length as defined in claim 5, and the Examiner has not demonstrated otherwise.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 5.

**REJECTION OF DEPENDENT CLAIM 6 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 6 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the

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application should be remanded to the Examiner.

Dependent claim 6 depends from claim 1, and further recites, in pertinent part:

the step of caching identifiers of the neighboring users, associated similarity factors, and time stamps

The Examiner explains that col. 5, lines 55-57 teaches this feature. Appellants disagree.

The noted language merely states the following:

The proxy server dissociates the user's true identity from the pseudonym by the use of cryptographic techniques.

While it is apparent that the above-noted language discusses how a proxy server dissociates the user's true identity from the pseudonym, this is not suggestive of a step of caching identifiers of the neighboring users, associated similarity factors, and time stamps, and the Examiner has not demonstrated otherwise.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 6.

**REJECTION OF DEPENDENT CLAIM 11 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 11 depends from claim 8, and further recites, in pertinent part:

further comprising assigning a confidence factor to each advisee profile and each user profile, wherein the confidence factor is based on the combined effect of selected pieces of information recorded in a user or advisee profile.

On page 13 of the Final Office Action, the Examiner identifies col. 30, lines 20-35 as disclosing or suggesting these features. Appellants disagree.

While it is true that the noted language discusses how user preferences can be used to evaluate products and provides for statistical confidence, this is not the same as assigning a confidence factor to each advisee profile and each user profile, wherein the confidence factor is based on the combined effect of selected pieces of information recorded in a user or advisee profile.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 11.

**REJECTION OF DEPENDENT CLAIM 12 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 12 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 12 depends from claim 8, and further recites, in pertinent part:

further including determining similarities between the advisee and each member of the first set of users after receiving a selected item list from the advisee.

On page 13 of the Final Office Action, the Examiner points to col. 6, lines 38-45 of HERZ as disclosing these features. Appellants disagree. The noted language of HERZ merely states the following:

In all these cases, the information delivery process in the preferred embodiment is based

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on determining the similarity between a profile for the target object and the profiles of target objects for which the user (or a similar user) has provided positive feedback in the past. The individual data that describe a target object and constitute the target object's profile are herein termed "attributes" of the target object.

There is no language whatsoever in the noted passages disclosing determining similarities between the advisee and each member of the first set of users after receiving a selected item list from the advisee. Nor has the Examiner shown how the noted language can be read or interpreted to disclose the recited feature.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 12.

**REJECTION OF DEPENDENT CLAIMS 20 AND 21 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claims 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 20 depends from claim 1 and dependent claim 21 depends from claim 8, and further recites, in pertinent part:

creating a user profile for each of the plurality of users, wherein the user profiles do not include any pre-computed similarity factors.

On page 8 of the Final Office Action, the Examiner points to col. 39, lines 1-22 of HERZ as disclosing these features. Appellants disagree. The noted language of HERZ merely discusses how user specific information is stored and the functions of a proxy server. This is not

the same as creating a user profile for each of the plurality of users, wherein the user profiles do not include any pre-computed similarity factors.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claims 20 and 21.

**REJECTION OF DEPENDENT CLAIMS 24 AND 25 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claims 24 and 25 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 24 depends from claim 22 and dependent claim 25 depends from claim 23, and further recites, in pertinent part:

updating only the similarity factors between the neighboring users and the advisee when a new rating is entered for the at least one advisee profile; and  
using an algorithm to determine a ranked matching list of the neighboring users.

On page 10 of the Final Office Action, the Examiner lists claim 24 as being rejected on the same basis as claim 1, but never specifically addresses the particular features of claim 24.

Furthermore, there is no mention of claim 25, much less, any discussion of how the features of this claim are rendered obvious.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claims

24 and 25.

**REJECTION OF DEPENDENT CLAIMS 26 AND 27 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claims 26 and 27 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 26 depends from claim 24 and dependent claim 27 depends from claim 25, and further recites, in pertinent part:

for each recommendation request by the advisee, computing for temporary use the similarity factors measuring the similarity between the advisee and the plurality of users; and  
associating the similarity factors with corresponding users to determine, per recommendation request, the neighboring users; and  
using the neighboring users determined per recommendation request to provide a basis for calculating the recommendation.

On page 8 of the Final Office Action, the Examiner lists claims 26 and 27 as being rejected on the same basis as claim 7, but neglects to note that claims 26 and 27 recite different features from that of claim 7. Furthermore, the Examiner never specifically addresses the particular features of claims 26 and 27, and does not specifically discuss how the particular features of these claims are rendered obvious.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claims 26 and 27.

**REJECTION OF DEPENDENT CLAIM 28 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 28 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 28 depends from claim 1, and further recites, in pertinent part:

the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list.

On page 7 of the Final Office Action, the Examiner points to col. 26, lines 22-45 of HERZ as disclosing these features. Appellants disagree. The noted language of HERZ merely states the following:

1. Initialize list of identified target objects to the empty list at step 13A00
2. Initialize the current tree T to be the hierarchical cluster tree of all objects at step 13A01 and at step 13A02 scan the current cluster tree for target objects similar to P, using the process detailed in FIG. 13B. At step 13A03, the list of target objects is returned.
3. At step 13B00, the variable I is set to 1 and for each child subtree  $T_i$  of the root of tree T, is retrieved.
4. At step 13B02, calculate  $d(P, p_i)$ , the similarity distance between P and  $p_i$ ,
5. At step 13B03, if  $d(P, p_i) < t$ , a threshold, branch to one of two options
6. If tree  $T_i$  contains only one target object at step 13B04, add that target object to list of identified target objects at step 13B05 and advance to step 13B07.
7. If tree  $T_i$  contains multiple target objects at step 13B04, scan the  $i$ th child subtree for target objects similar to P by invoking the steps of the process of FIG. 13B recursively and then recurse to step 3 (step 13A01 in FIG. 13A) with T bound for the duration of the recursion to tree  $T_i$ , in order to search in tree  $T_i$  for target objects with profiles similar to P.

While it is apparent that the above-noted language discusses how target objects with

similar profiles are searched, this is not the same as determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list. Target objects do not constitute only items of the selected item list which indicate similarity as defined in claim 1, and the Examiner has not demonstrated otherwise.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim 28.

**REJECTION OF DEPENDENT CLAIM 29 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claim 29 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 29 depends from claim 8, and further recites, in pertinent part:

the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request.

On pages 10-12 of the Final Office Action, the Examiner lists claim 29 as being rejected on the same basis as claim 1, and apparent believes that col. 8, lines 38-48 teaches the features of claim 29. Appellants disagree. The noted language merely discusses how target profile interest summaries can be used to predict consumption patterns of a user to allow for pre-cashing.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claim

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29.

**REJECTION OF DEPENDENT CLAIMS 30 AND 31 UNDER 35 U.S.C. § 103 IS IN ERROR**

The rejection of claims 30 and 31 under 35 U.S.C. § 103(a) as being unpatentable over HERZ alone is in error, the decision of the Examiner to reject this claim should be reversed, and the application should be remanded to the Examiner.

Dependent claim 30 depends from claim 28 and dependent claim 31 depends from claim 29, and further recites, in pertinent part:

storing or updating all ratings in a single large sparse matrix in a computer's main memory; and  
postponing any calculations of the similarity factors and the neighboring users until a concrete request for recommendation for the advisee is to be processed.

On page 5 of the Final Office Action, the Examiner lists claims 30 and 31 as being rejected on the same basis as claim 1, but neglects to note that claims 30 and 31 recite different features from that of claim 1. Furthermore, the Examiner never specifically addresses the particular features of claims 30 and 31, and does not specifically discuss how the particular features of these claims are rendered obvious.

Because the above-noted document fails to disclose, or even suggest, at least the above-noted features of the instant invention, Appellants submit that no proper modification of this document renders unpatentable the combination of features recited in at least dependent claims 30 and 31.

**REJECTION OF CLAIMS 9, 10, 13-19, 22 AND 23 UNDER 35 U.S.C. § 103 IS IN ERROR**

Claims 9, 10, 13-19, 22 and 23 stand or fall with the claims from which they depend.

**CONCLUSION**

Each of claims 1-32 is patentable under 35 U.S.C. §103(a). Specifically, the applied art of record, even in properly modified, fails to disclose or suggest the unique combination of features recited in Appellant's claims 1-32. Accordingly, Appellants respectfully request that the Board reverse the decision of the Examiner to reject claims 1-32 under 35 U.S.C. §103(a), and remand the application to the Examiner for withdrawal of the above-noted rejections.

Respectfully submitted,  
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Attachments: Claims Appendix,  
Evidence Appendix, and  
Related Proceedings Appendix

**(VIII) CLAIMS ON APPEAL**

1. A computerized method for generating a recommendation of an item to an advisee, comprising the steps of:

receiving a recommendation request comprising a selected item list from an advisee for a recommendation by a recommendation system;

in response to the recommendation request, computing a plurality of similarity factors based on:

at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item, wherein the advisee profile comprises a plurality of records, each record including a user identifier, an item identifier, and a rating value, such that each record is linked in a first and a second dimension; and

items from the selected item list that indicate similarity between the advisee and a plurality of users of the recommendation system who have previously provided ratings of items from the selected item list;

selecting, from the plurality of users of the recommendation system, neighboring users to the advisee, according to the similarity factors;

generating a recommendation of at least one item of the selected item list, according to the previously provided ratings of the at least one item by the neighboring users,

wherein the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request.

2. The method of claim 1, wherein all items upon which the step of computing depends are included in the selected item list.

3. The method of claim 2, wherein the recommendation of at least one item includes only items that are included in the selected item list.



4. The method of claim 1, wherein the step of selecting neighboring users excludes, any user whose similarity with the advisee is below a predetermined threshold.

5. The method of claim 1, wherein the step of computing and the step of selecting are executed substantially in parallel by inserting each newly computed similarity factor into a neighbor list in decreasing order of similarity and by limiting length of the neighbor list by excluding a user with lowest similarity if otherwise the neighbor list would exceed a predetermined length.

6. The method of claim 1, further including the step of caching identifiers of the neighboring users, associated similarity factors, and time stamps.

7. A user profile for a recommendation system, comprising a plurality of records, each record including a user identifier, an item identifier, and a rating value, wherein each record is linked in a first and a second dimension, the first dimension linking records with a same user identifier in a sequence according to the item identifier, and the second dimension linking records with a same item identifier in a sequence according to the user identifier, wherein the system updates only similarity factors between neighboring users and an advisee when a new rating is entered for at least one advisee profile and utilizes an algorithm to determine a ranked matching list of the neighboring users.

8. A computerized method for generating a recommendation of an item to an advisee, comprising the steps of:

receiving a recommendation request comprising a selected item list from an advisee for the recommendation by a recommendation system;

in response to the recommendation request, computing a plurality of similarity factors based on at least one advisee profile from at least one newly rated item and determining which at least one user has already rated the item;

selecting a first set of users from a group of users of the recommendation system based on the selected item list;

selecting neighboring users from the first set of users based on similarities between the advisee and each member of the first set of users; and

generating a recommendation of at least one item from the selected item list based on ratings provided by each neighboring user,

wherein the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list.

9. The computerized method of claim 8, wherein the similarities are determined from an advisee profile and user profiles, and the advisee and user profiles are based on advise and user behavior including at least one of buying pattern, item ratings, bookmarked websites, website usage pattern, and user action relative to a particular item.

10. The computerized method of claim 9, wherein an advisee profile or a user profile is updated when a new piece of information is added thereto.

11. The computerized method of claim 8, further comprising assigning a confidence factor to each advisee profile and each user profile, wherein the confidence factor is based on the combined effect of selected pieces of information recorded in a user or advisee profile.

12. The computerized method of claim 8, further including determining similarities between the advisee and each member of the first set of users after receiving a selected item list from the advisee.

13. The computerized method of claim 8, wherein a member of the first set of users is selected as a neighboring user if the similarity between the advisee and the member of the first set of users is better than a predetermined threshold.

14. The computerized method of claim 8, further comprising assigning a weight to each neighboring user where the weight is greater for a neighboring user have greater similarity to the advisee and the weight is lower for a neighboring user having a lower similarity to the advisee.

15. The method of claim 1, further comprising updating the selected neighboring users each time a new rating is entered or inferred during the recommendation request.

16. The system of claim 7, wherein the system updates selected neighboring users each time a new rating is entered or inferred during a recommendation request.

17. The method of claim 8, further comprising updating the selected neighboring users each time a new rating is entered or inferred during the recommendation request.

18. The method of claim 1, wherein the selected neighboring users are users who have a similarity factor which is better than a predetermined threshold value.

19. The method of claim 8, wherein the selected neighboring users are users who have a similarity factor which is better than a predetermined threshold value.

20. The method of claim 1, further comprising creating a user profile for each of the plurality of users, wherein the user profiles do not include any pre-computed similarity factors.

21. The method of claim 8, further comprising creating a user profile for each of the users, wherein the user profiles do not include any pre-computed similarity factors.

22. The method of claim 20, further comprising selecting each neighboring user when the neighboring user's similarity factor is better than a predetermined threshold factor.

23. The method of claim 21, further comprising selecting each neighboring user when the neighboring user's similarity factor is better than a predetermined threshold factor.

24. The method of claim 22, further comprising:  
updating only the similarity factors between the neighboring users and the advisee when a new rating is entered for the at least one advisee profile; and  
using an algorithm to determine a ranked matching list of the neighboring users.

25. The method of claim 23, further comprising:  
updating only the similarity factors between the neighboring users and the advisee when a new rating is entered for the at least one advisee profile; and  
using an algorithm to determine a ranked matching list of the neighboring users.

26. The method of claim 24, further comprising:  
for each recommendation request by the advisee, computing for temporary use the similarity factors measuring the similarity between the advisee and the plurality of users; and  
associating the similarity factors with corresponding users to determine, per recommendation request, the neighboring users; and  
using the neighboring users determined per recommendation request to provide a basis for calculating the recommendation.

27. The method of claim 25, further comprising:  
for each recommendation request by the advisee, computing for temporary use the similarity factors measuring the similarity between the advisee and the plurality of users; and  
associating the similarity factors with corresponding users to determine, per recommendation request, the neighboring users; and  
using the neighboring users determined per recommendation request to provide a basis for calculating the recommendation.

28. The method of claim 1, wherein the method determines the similarity factors between the advisee and the neighboring users only for the items of the selected item list.

29. The method of claim 8, wherein the similarity factors of the advisee are not calculated with respect to all users for every individual recommendation request.

30. The method of claim 28, further comprising:

storing or updating all ratings in a single large sparse matrix in a computer's main memory; and

postponing any calculations of the similarity factors and the neighboring users until a concrete request for recommendation for the advisee is to be processed.

31. The method of claim 29, further comprising:

storing or updating all ratings in a single large sparse matrix in a computer's main memory; and

postponing any calculations of the similarity factors and the neighboring users until a concrete request for recommendation for the advisee is to be processed.

32. A computerized method for recommending an item to an advisee utilizing a user profile comprising, for each of a multitude of items, at least a rating value and excluding any pre-computed similarity factor measuring similarity between users, wherein the method constructs a recommendation to the advisee and comprises:

temporarily calculating, for use within a recommendation request only, a multitude of similarity factors measuring the similarity between the advisee and the multitude of other users;

associating the similarity factors with the other users;

determining a subset, from the multitude of users, of neighboring users nearest the advisee as determined by the similarity factors; and

recommending at least one item based on the similarity factors of the neighboring users

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and based on rating values of the items by the neighboring users.

**(IX) EVIDENCE APPENDIX**

This section lists evidence submitted pursuant to 37 C.F.R. §§1.130, 1.131, or 1.132, or any other evidence entered by the Examiner and relied upon by Appellants in this appeal, and provides for each piece of evidence a brief statement setting forth where in the record that evidence was entered by the Examiner. Copies of each piece of evidence are provided as required by 37 C.F.R. §41.37(c)(ix).

NO.	EVIDENCE	BRIEF STATEMENT SETTING FORTH WHERE IN THE RECORD THE EVIDENCE WAS ENTERED BY THE EXAMINER
1	N/A	N/A

**(X)** RELATED PROCEEDINGS APPENDIX

Pursuant to 37 C.F.R. §41.37(c)(x), copies of the following decisions rendered by a court of the Board in any proceeding identified above under 37 C.F.R. §41.37(c)(1)(ii) are enclosed herewith.

NO.	TYPE OF PROCEEDING	REFERENCE NO.	DATE
1	N/A	N/A	N/A